



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------------|------------------|
| 10/675,575 | 09/30/2003 | Leonard J. Olmer | Bever 2-3-16-20/075903-8 | 9967 |
| 29391 | 7590 | 09/20/2005 | EXAMINER | |
| BEUSSE BROWNLEE WOLTER MORA & MAIRE, P. A. 390 NORTH ORANGE AVENUE SUITE 2500 ORLANDO, FL 32801 | | | EL ARINI, ZEINAB | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1746 | |

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/675,575 | Applicant(s) OLMER ET AL. | |
| | Examiner Zeinab E. EL-Arini | Art Unit 1746 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The specification, as originally filed, does not provide detailed description of figure 7.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 19 are incomplete, because steps for removing contaminants have not been recited.

In claim 1, line 5, “relatively” is indefinite and relative term.

In claims 3, 4, 7-9, 15,22-24, and 32, line 1, “the step” lacks antecedent basis.

In claims 11-12, 17, 27-29, and 34, line 1, “the steps” lacks antecedent basis.

In claim 12, line 1, “the execution”, and at line 2, “the pressure” are all without proper antecedent basis.

In claim 28, line 2, “the same pressure” lacks antecedent basis.

4. Claims 1 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting

essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the removing steps.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an

international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Yates (6,350,322).

Yates discloses a method of cleaning and drying semiconductor structure. The reference discloses a semiconductor structure is placed into a treatment vessel and chemically treated. Chemical treatment may be any number of treatments such as rinsing the semiconductor structure in an aqueous HF solution, performing an HF dry etch on the semiconductor structure, performing a buffered oxide etch on the semiconductor structure,

performing a polysilicon etch on the semiconductor structure, other wet or dry etching processes, photoresist stripping or RCA cleaning. The reference also discloses drying the surface with isopropyl alcohol, forming a hydrogen termination on the surface, and exposing the surface to a nitrogen containing gas as claimed. See col. 5, lines 15-28, lines 45-49, col. 6, lines 4-8, and col. 2, lines 7-20.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 and 4-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates in combination with Chaudhry et al. (6,690,040) and applicants' disclosure.

Yates as discussed supra discloses all limitations with the exception of the surface, the temperature, the time, the nitrogen fluoride, forming a material layer over the surface, the flow rate, subjecting the surface to hydrogen bake as claimed.

Chaudhry et al. disclose a method of integrated circuit structure. The reference discloses forming a material layer over the surface, the surface, the temperature, and cleaning the surface. See col. 4, lines 8- 65, col. 5, lines 31-65, col. 7, lines 15-18, and col. 9, lines 38-44.

It would have been obvious for one skilled in the art to use the temperature, forming the material layer, and the surface taught by Chaudhry et al. in the Yates process to obtain the claimed process. This is because both references are from the same technical endeavor, which is a method of fabricating semiconductor structure, and forming a layer and the surface are well known in the art.

Using nitrogen fluoride for removing contaminants from a surface of semiconductor device is well known in the art. Subjecting the surface to a hydrogen bake and forming a material layer is well known in the art, see applicants' disclosure, pages 1-4 (background of the invention). It would have been obvious for one skilled in the art to adjust the time and flow rate to obtain optimum results.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ohta (6,336,463) discloses cleaning/drying station and production line for semiconductor devices. Arac (4,752,505) discloses pre-metal deposition cleaning for bipolar semiconductors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeinab E. EL-Arini whose telephone number is (571) 272-1301. The examiner can normally be reached on Monday-Friday.

Application/Control Number:
10/675,575
Art Unit: 1746

Page 10

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/675,575
Art Unit: 1746

Page 11

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zeinab Elarini
Zeinab E. EL-Arini
Primary Examiner
Art Unit 1746

ZEE
09/16/05